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Notice of Allowability

Application No.

09/321,351

Examiner

Chirag G. Shah

Applicant(s)

MCNEILL ET AL.

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/14/06.
2. ☒ The allowed claim(s) is/are 2-42, 45-49, and 52-55; renumbered 1-50 respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☒ to Paper No./Mail Date 20050202.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.



CHIRAG SHAH
PATENT EXAMINER, 2616

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Merle Richman on 8/18/06.

The application has been amended as follows:

2. (Currently Amended) A method of determining whether a voice signal communicated over a digital voice network includes a modulated data signal, the method comprising the steps of:

- a) determining whether an answer tone is present in the voice signal;
- b) when an answer tone is present, performing the steps of:
 - i) locating a first phase reversal in the voice signal, including:
 - 1) performing an autocorrelation of a segment of the voice signal;
 - 2) searching for the lowest value of the autocorrelation of the segment of the voice signal;
 - 3) comparing the determined lowest value of the autocorrelation to a predetermined value; and
 - 4) indicating a phase reversal has occurred when the determined lowest value is less than the predetermined value;
 - ii) locating a second phase reversal in the voice signal, the second phase signal being the next consecutive phase reversal in the voice signal after the first phase reversal;
 - iii) determining the time interval between the location of the first phase reversal in the signal and the second phase reversal in the voice signal; and
 - iv) indicating that the voice signal includes a modulated data signal when the determined time interval is between a predetermined range of time values.

3. (Currently Amended) A method of determining whether a voice signal communicated over a digital voice network includes a modulated data signal, the method comprising the steps of:

- a) determining whether an answer tone is present in the voice signal;
- b) when an answer tone is present, performing the steps of:
 - i) locating a first phase reversal in the voice signal, including:
 - ii) locating a second phase reversal in the voice signal, the second phase signal being the next consecutive phase reversal in the voice signal after the first phase reversal;
 - iii) determining a first time interval between the location of the first phase reversal in the signal and the second phase reversal in the voice signal; and
 - iv) indicating that the voice signal includes a modulated data signal when the first determined time interval is between a predetermined range of time values;
 - v) when the first determined time interval is not between the predetermined range of time values, performing the steps of:
 - 1) locating a third phase reversal in the voice signal, the third phase signal being the next consecutive phase reversal in the voice signal after the second phase reversal;
 - 2) determining a second time interval between the location of the second phase reversal in the signal and the third phase reversal in the voice signal;
 - 3) indicating that the voice signal includes a modulated data signal when the second determined time interval between the location of the second phase reversal in the signal and the third phase reversal in the voice signal is between the predetermined range of time values; and

- 4) indicating that the voice signal does not include a modulated data signal when the second determined time interval between the location of the second phase reversal in the signal and the third phase reversal in the voice signal is not between the predetermined range of time values.

4. (Currently Amended) A method of determining whether a voice signal communicated over a digital voice network includes a modulated data signal, the method comprising the steps of:

- a) determining whether an answer tone is present in the voice signal, including:
 - 1) selecting a segment of the voice signal;
 - 2) converting the segment of the voice signal from a time domain signal to a frequency domain signal;
 - 3) comparing the energy of a bin of the frequency domain signal that corresponds to the frequency of the answer tone with adjacent frequency bins; and
 - 4) indicating that the answer tone is present in the segment of the voice signal when the energy of the frequency bin corresponding to the frequency of the answer tone is greater than the energy of the adjacent frequency bins;
- b) when an answer tone is present, performing the steps of:
 - i) locating a first phase reversal in the voice signal;
 - ii) locating a second phase reversal in the voice signal, the second phase signal being the next consecutive phase reversal in the voice signal after the first phase reversal;
 - iii) determining the time interval between the location of the first phase reversal in the signal and the second phase reversal in the voice signal; and
 - iv) indicating that the voice signal includes a modulated data signal when the determined time interval is between a predetermined range of time values.

42. (Currently Amended) A method of packetizing a digital voice signal for transmission over a digital voice network where the voice signal may include a modulated data signal, the method comprising the steps of:

- a) determining whether the digital voice signal includes a modulated data signal; and
- b) when the digital voice signal includes a modulated data signal, performing the steps of:
 - i) encoding the voice signal into a digital data signal comprising the modulated data signal by linearly quantizing the voice signal;
 - ii) finding the sample of the voice signal having the maximum value;
 - iii) normalizing the sample of the voice signal having the maximum value by left shifting the sample until all redundant sign bits are eliminated where NLS is the number of left shifts;
 - iv) right shifting all the samples of the voice signal as a function of NLS;
 - v) converting the normalized voice signal into a digital floating point signal; and
 - vi) packetizing the coded voice signal into a plurality of digital packets for transmission over the digital voice network.

43. (Cancelled).

44. (Cancelled).

45. (Currently Amended) The method according to claim ~~44~~ 42, wherein step c) includes the step of right shifting all the samples of the voice signal as a function of NLS and the bit precision of the mantissa of the floating point signal.

46. (Currently Amended) The method according to claim ~~44~~ 42, wherein step c) includes the step of right shifting all the samples of the voice signal by $16 - \text{NLS} - \text{N_prec}$ where N_prec is the bit precision of the mantissa of the floating point signal.

48. (Currently Amended) The method according to claim ~~43~~ 42, further including the step of downsampling the voice signal from a first rate to a second lower rate.

49. (Currently Amended) A method of transmitting a digital voice signal over a digital voice network where the voice signal may include a modulated data signal, the method comprising the steps of:

- a) determining whether the digital voice signal includes a modulated data signal;
- b) when the digital voice signal includes a modulated data signal, performing the steps of:
 - i) encoding the voice signal into a digital data signal comprising the modulated data signal by linearly quantizing the voice signal;
 - ii) finding the sample of the voice signal having the maximum value;
 - iii) normalizing the sample of the voice signal having the maximum value by left shifting the sample until all redundant sign bits are eliminated where NLS is the number of left shifts;
 - iv) right shifting all the samples of the voice signal as a function of NLS;
 - v) converting the normalized voice signal into a digital floating point signal; and
 - vi) packetizing the coded voice signal into a plurality of digital packets for transmission over the digital voice network
- c) transmitting the digital packets across the network;
- d) converting the digital packets into a received digital signal;

- e) determining whether the received signal includes a coded voice signal;
and
- f) when the received digital signal includes a encoded data signal
decoding the received digital signal into a modulated voice signal by
dequantizing the received digital signal.

50. (Cancelled).

51. (Cancelled).

52. (Currently Amended) The method according to claim ~~51~~ 49, wherein step c) includes the step of right shifting all the samples of the voice signal as a function of NLS and the bit precision of the mantissa of the floating point signal.

53. (Currently Amended) The method according to claim ~~51~~ 49, wherein step c) includes the step of right shifting all the samples of the voice signal by $16 - \text{NLS} - \text{N_prec}$ where N_prec is the bit precision of the mantissa of the floating point signal.

55. (Currently Amended) The method according to claim ~~50~~ 49, further including the step of downsampling the voice signal from a first rate to a second lower rate.

Reasons For Allowance

2. The following is an examiner's statement of reasons for allowance:

Regarding claim 2, Prior Art fails to disclose of when an answer tone is present, performing the steps of location a first phase reversal in the voice signal, including performing an autocorrelation, searching for the lowest value of the autocorrelation of the segment of the voice signal, comparing and indicating a phase reversal has occurred when the determined lowest value is less than the predetermined value in combination with other limitation set forth in the respective claim.

Regarding claim 3, Prior Art fails to disclose when the first determined time interval is not between the predetermined range of time values, performing the steps of locating a third phase interval in the voice signal, determining a second time interval between the location of the second and third phase interval and indicating the voice signal includes a modulated data signal when the second determined time interval between the location of the second phase reversal in the signal and the third phase reversal in the voice signal is between the predetermined range of time value in combination with other limitation set forth in the respective claim.

Regarding claim 4, Prior Art fails to disclose determining whether an answer tone is present in a voice signal including converting from time to frequency signal, comparing the energy of a bin of the frequency domain signal that corresponds to the frequency of the answer tone with adjacent frequency bins and indicating that the answer tone is present in the voice signal when the energy of the frequency bin corresponding to

the frequency of the answer tone is greater than the energy of the adjacent frequency bins in combination with other limitation set forth in the respective claim.

Regarding claim 6, Prior Art fails to disclose when an answer tone is present, performing the step of when the determined time interval is between a predetermined rang of time values, demodulating the voice signal to generate a digital data signal and packetizing the digital data signal into a plurality of digital packets for transmission over the digital voice network in combination with other limitation set forth in the respective claim.

Regarding claim 12, Prior Art fails to disclose when the determined time interval is between a predetermined rang of time values, performing the steps of encoding the voice signal into a digital data signal comprising the modulated data signal by linearly quantizing the voice signal and packetizing the digital data signal into a plurality of digital packets for transmission over the digital voice network in combination with other limitation set forth in the respective claim.

Regarding claim 18, Prior Art fails to disclose when an answer tone is present, performing the step of when the determined time interval is between a predetermined rang of time values, demodulating the voice signal to generate a digital data signal and packetizing the digital data signal into a plurality of digital packets for transmission over the digital voice network in combination with other limitation set forth in the respective claim.

Regarding claim 24, Prior Art fails to disclose when an answer tone is present, performing the step of when the determined time interval is between a predetermined rang of time values, demodulating the voice signal to generate a digital data signal and

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packetizing the digital data signal into a plurality of digital packets for transmission over the digital voice network in combination with other limitation set forth in the respective claim.

Regarding claim 42, Prior Art fails to disclose determining whether the digital voice signal includes a modulated data signal by finding the sample of the voice signal having the maximum value, normalizing the sample of the voice signal having the maximum value by left shifting the sample until all redundant sign bits are eliminated where NSL is the number of left shifts in combination with other limitation set forth in the respective claim.

Regarding claim 49, Prior Art fails to disclose determining whether the digital voice signal includes a modulated data signal by finding the sample of the voice signal having the maximum value, normalizing the sample of the voice signal having the maximum value by left shifting the sample until all redundant sign bits are eliminated where NSL is the number of left shifts in combination with other limitation set forth in the respective claim.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7682. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cgs

August 18, 2006

A handwritten signature in black ink, appearing to read 'Chirag Shah', is written over a horizontal line.

Chirag Shah
Patent Examiner, 2616